Pharmaceutical Calculations Course Syllabus

Course Title: Pharmaceutical Calculations

Course Code: Phar2072

Course EtCTS: 2

Course hrs.: 54hrs

Course Description:

- ✓ This course is designed to familiarize students with the basic calculations related with pharmacy practices. The course introduces students with some fundamentals of measurement and calculations, calculation of doses and formulas, dilution and concentration and isotonic, buffer and electrolyte solutions

Course Objective:

After completion of this course students will be able to:

- ✓ Understand the basic concepts about balance sensitivity, significant figures, accuracy and percentage of errors, measurement of volume and weight, aliquot method of weighing and measuring, density, specific gravity, specific volume which are important in pharmacy practices.
- ✓ Understand the basic calculations in percentage preparations, dosage conversions, formula reduction and enlargement
- ✓ Understand the basic calculations of dilution and concentration
- ✓ Understand the basic calculations in isotonic, buffer and electrolyte solutions
- ✓ Understand the basic calculations involving parenteral admixtures and radiopharmaceuticals

Course Contents

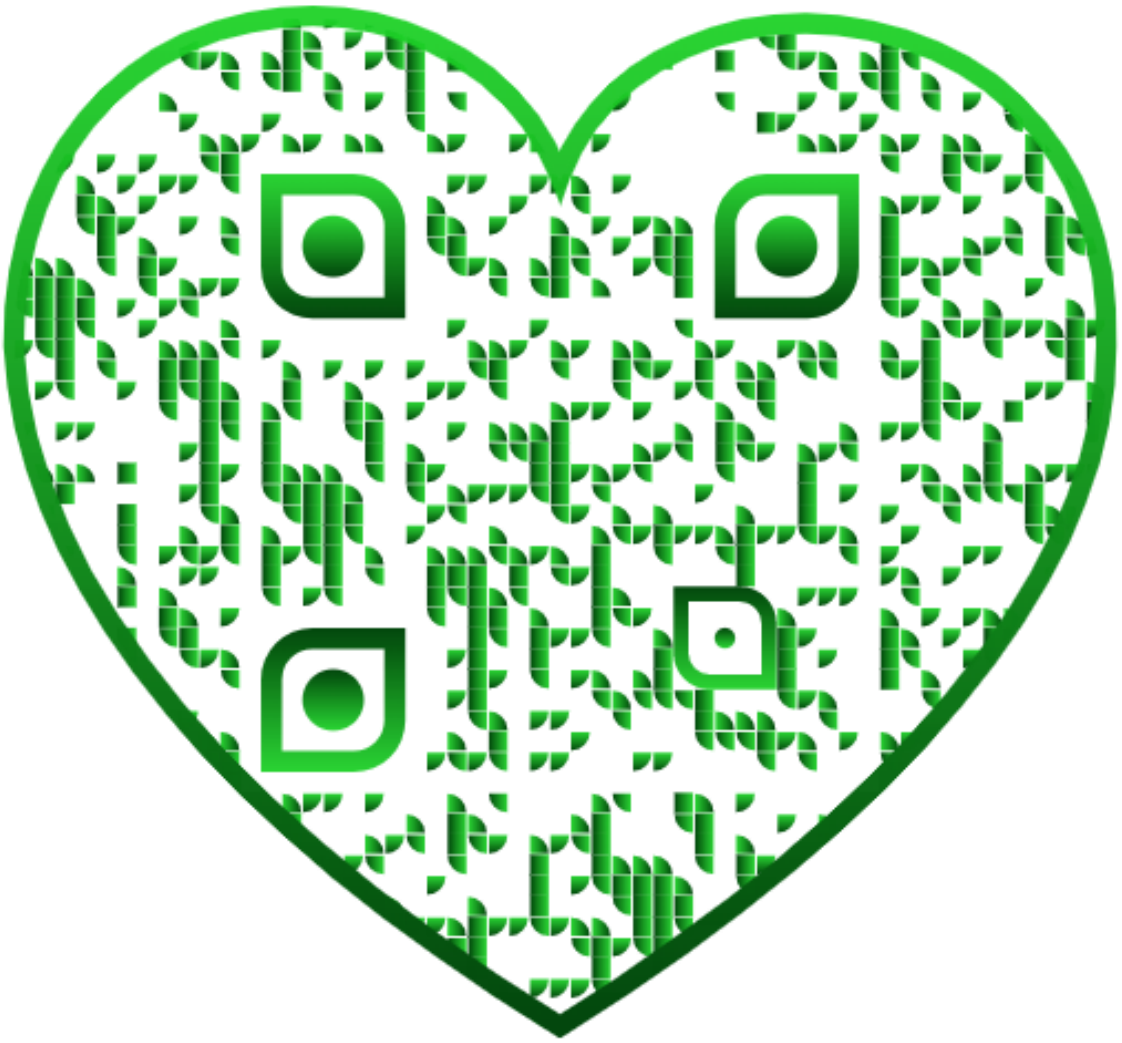
1. Some fundamentals of measurement and calculations (2hrs)

1.1. Balance sensitivity, significant figures, accuracy and percentage of errors

1.2. Measurement of volume and weight

1.3. Aliquot method of weighing and measuring

1.4. Density, specific gravity, specific volume



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2. Percentage calculations (2hrs)

2.1. Percentage, ratio and proportion

2.2. Percentage preparations (percentage W/V, V/V, W/W)

2.3. Conversions of concentration to mg/mL, Parts per million (ppm)

3. Calculation of doses and formulas (2hrs)

3.1. Calibration of Droppers

3.2. Calculations of doses (dose size, number of doses, amount dispensed, quantity of ingredient)

3.3. Drug Dosage based on Age (pediatrics and geriatrics)

3.4. Drug Dosage based on Body Weight

3.5. Drug Dosage based on Body Surface Area

3.6. Enlarging and reducing formulas

4. Dilution and concentration (4hrs)

4.1. Strength and total quantity

4.2. Dilution and Concentration of liquids

4.3. Dilution and Concentration of solids

4.4. Triturations

4.5. Alligation medial and Alligation Alternate

4.6. Specific gravity of Mixture

5. Isotonic, buffer and electrolyte solutions (3hrs)

5.1. Calculation for Isotonic Solution preparation

5.2. Sodium Chloride equivalent of a substance

5.3. Isotonicity, osmolarity, milliequivalents, milliosmoles

5.4. Buffers and buffer solutions

5.5. Buffer equation

5.6. Isotonic buffer solutions

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6. Some calculations involving parenteral admixtures (2hrs)

- ✓ Dry powders for reconstitution, parenteral admixtures, additives, hyperalimentation solutions, rate of flow of IV fluids

7. Some calculations involving radiopharmaceuticals (1hrs)

- ✓ Radioisotopes, radioactivity, units of radioactivity

Mode of Delivery

- ✓ Lecture: 16hrs
- ✓ Assignment: 8 hrs
- ✓ Home study: 24hrs
- ✓ Tutorial: 6hrs

Mode of Assessment:

- o Assignments: 15%
- o Mid Exam: - 30%
- o Quizzes: 10%
- o Attendance and Participation 5%
- o Final exam: 40%

Course Policies:

▪ Students are expected to have 100% attendance and to read all reading assignments in advance

▪ Student should submit all group and/or individual assignments on due date

▪ Student should take all continuous assessments as scheduled.

References

1. Stoklosa, M. J. and Ansel, H. C. Pharmaceutical calculations, 8th ed., Lea & Febiger, Philadelphia, 1986

2. Joel L. Zatz and M. G. Teixeira. Pharmaceutical calculations, 4th ed., John Wiley & Sons, Inc., New Jersey, 2005